DOCUMENT RESUME

ED 144 927 SP 011 523

AUTHOR Long, Lynette
TITLE The Effects of Pre-Teaching Teacher Interaction Style on Student Achievement.
PUB DATE [77]
NOTE 19p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Academic Achievement; *College Students; Higher Education; Interaction Process Analysis; *Performance Factors; *Question Answer Interviews; Questioning Techniques; *Response Mode; *Student Teacher Relationship; Teacher Response; Teaching Styles

ABSTRACT

Experiments were conducted on five treatment groups of undergraduate students to determine the effect teacher/student interaction styles would have on the achievement levels of these students. The undergraduate students were administered mathematical achievement tests, after which the test administrators conducted fifteen-minute interviews. Each group received questioning on the same topics, but the interviewer response styles for each of the groups were different, reflecting a concentration on the following modes: (1) reflection, (2) identification, (3) questioning, (4) a composite of the first three, and (5) control (no interview). Upon completion of the interview, the interviewer assumed the role of teacher, instructing the group in a mathematical concept called the "star operation." Upon completion of the teaching sessions, the groups underwent a ten-minute "Star Achievement Test" and, under the supervision of the project administrator, completed a Condensed Barrett-Lennard Test, measuring the group members' perceptions of understanding and respect shown by the interviewer/teacher toward them. Interpretation of data revealed no significant relationship between ratings on the Condensed Barrett-Lennard Test and the Star Achievement Test nor between response style and achievement. (MJB)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED144927

THE EFFECTS OF PRE-TEACHING TEACHER INTERACTION STYLE ON STUDENT ACHIEVEMENT

Lynette Long, Ph.D.
Director
Curriculum Development Center
Catholic University of America

SP011523

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

THE EFFECTS OF PRE-TEACHING TEACHER INTERACTION STYLE ON STUDENT ACHIEVEMENT

Research has shown the effectiveness of empathy, genuineness, and respect in both counseling and teaching relationships (Aspy, 1972). Carkhuff (1967) has shown that high levels of these conditions promote more constructive client change in a counseling relationship. There is also evidence presented by Aspy (1965) that high levels of these conditions, provided by teachers in their interactions with students, lead to higher student achievement gains. Studies by Carkhuff (1967) demonstrate that training can be effectively used to increase measured levels of empathy, concreteness, and respect in individual communication patterns. This study considers the effect empathy training for teachers has on student achievement.

The objective of this investigation was to ascertain which, if any, of several teacher response styles produce measurable differences on a subsequent testing of undergraduate students. The response styles were used by the teacher during an informal interview which took place immediately prior to the teaching of a structured lesson. Mean scores were obtained for each of five treatment groups on a mathematical ability test, and a mathematical achievement test. Subjects were also administered a condensed version of the Barrett-Lennard Relationship Inventory (1959) which measures the perception of respect and understanding one person thinks another holds for him.

METHOD

Subjects

The population from which both the experimental and control subjects for this study were selected consisted of students enrolled in Child Development during the summer session of 1974 at the University of Illinois-Urbana. All students enrolled in these courses were required to participate as subjects in 4 hours of experiments and therefore cannot be considered voluntary.

The experimenters for this study, whose task it was to take background data and administer two questionnaires to the subjects concerning the interview, were two female doctoral students in educational psychology at the University of Illinois.

The 30 interviewers used in this study were selected from the students enrolled in Counseling Theory and Practice, during the experimental period. All students enrolled in this course are graduate students at the University of Illinois pursuing a degree in one of the behavioral sciences. Completion of the training program and interviews was required as a partial fulfillment of the laboratory section of this course.

Measurement of Variables

The dependent variables used during this study were:

1. A rating of the frequency of the interviewer response style and response focus.
2. A mathematical ability test.
3. An achievement test on the star operation. A measure of the subject's perception of the interviewer's empathic understanding and respect.

In order to determine if the five treatments in which interviews are conducted actually differ in interviewer response style a count of the interviewer's responses according to their styles was obtained. Each independent clause was classified as one of the response styles of reflection-elaboration, identification, questioning, or solution giving. Each independent clause was also categorized according to its focus (experience, cognition, affect). Thus, there were 12 possible categories of classification. Interrater reliability, using a Pearson Product Moment correlation was computed ($R = + .95$).

Mathematical Aptitude was measured by a 15 minute test which consisted of 40 items which present 2 mathematical Stimuli, A and B between which the student was to determine a relationship. The items were taken directly from a 50-item mathematical ability test developed by Educational Testing Service. (Scat Series II, Form IA)

The Star Achievement Test consisted of 20 items which present two mathematical stimuli A and B. The student was to determine the relationship between them. The 20 items covered the levels of Bloom's taxonomy for the cognitive domain labeled understanding, application, analysis, and synthesis.

The condensed Barrett-Lennard was designed to measure the subject's perception of the interviewer's understanding of him/her and respect for him/her. The instrument contains 20 items all taken from the Barrett-Lennard Relationship Inventory which contains 64 items and yields scores for the four variables of level of regard, empathic understanding, congruence, and unconditional positive regard (Barrett-Lennard, 1962.)

Procedure

The pretest-posttest control group design (Campbell & Stanley, 1963) in which equivalent groups are achieved by a randomization was employed.

The study involved the use of five treatment groups, each defined in terms of the teacher's predominant preteaching behavior.

1. Reflection: Accurate paraphrasing and interpretation of student stimuli.
2. Indentification: Disclosing parallel personal teacher information.
3. Questioning: Content related questions.
4. Composite: A combination of the previous three styles: reflection-elaboration, identification, and questioning, with no one response style occurring over 50% of the time.
5. Control: The subjects had no pre-teaching interview; instead they were asked to listen to a 15 minute tape dealing with affect in education.

Initially, the experimenter introduced herself to each subject individually, solicited the required demographic data and briefly explained the experimental procedure. Upon entering the interview room the subject was greeted by the interviewer, who immediately administered a Mathematical Aptitude Test (MAT). After the subject completed the MAT a 15-minute informal interview was conducted by the interviewer.

All interviews focused around the following three topics: performance on the MAT, general mathematical competence and success in school. After completion of the interview, each interviewer taught the subject the star operation, a new mathematical concept, in the same manner and in the same amount of time. The lesson was designed so that no subjects would have familiarity with the content material presented.

Upon completion of the mini-lesson the interviewer administered a 10-minute Star Achievement Test (SAT) to the subject.

The subject returned to the experimentor to fill out the Condensed Barrett-Lennard.

The five treatments represent the study's major independent variables. All the teachers experienced the same training program, which was developed by the author. It was designed to train individuals both to discriminate between the response styles of reflection, identification, clarification, and questioning as well as to communicate using these styles.

Results

Each independent clause was classified according to its response style. An overall description of the statements that were classified by the raters can be found in Table 1. The most frequent occurring response style, questioning, accounts for almost 40% of the responses made. Solutions were the least frequent response style, accounting for less than 7% of the total number of responses.

During the experiential period each subject was given an ability test, and an achievement test.

Mean scores for each of these measures are listed in Table 2 according to the treatment group from which they were computed. Means from the total sample are also presented.

Table 3 shows the relationships between these measures and the treatments. In the present investigation Kuder-Richardson 21, an internal measure of consistency, yielded reliabilities of .802 for the MAT and .333 for the SAT, while the correlation between the MAT and the SAT is .579.

An analysis of covariance was used to consider the effects of the five treatment groups on student achievement. The Star Achievement Test was the dependent variable and the Mathematical Ability Test was the covariate. The ANOVA results listed in Table 4 show no significant effect of any treatment.

T-tests along with previously reported correlations were used to see if there was any significant relationship between ratings on the Condensed Barrett-Lennard and the Star Achievement Test. High respect and low respect interviews were compared on raw scores on the Star Achievement Test. All interviews which received a respect score of at least one-half a standard deviation above the mean (48.8) were defined as high respect interviews while all interviews which received a respect score of at least one-half a standard deviation below the mean (39.7) were defined as low respect interviews. None of these results were significant. A similar analysis was conducted to compare high (42.5) and low (32.5) understanding interviews on the variable of student achievement.

The relationship between the degree to which each of the response styles was implemented during the interview and the dependent variables of student achievement, respect, and understanding, was considered. Trained raters classified the interviewer statements as either reflections, identifications, questions or solutions. Each interviewer then received four ratios which were computed by dividing the number of responses of any one style by the total number of responses made during the interview. These ratios indicated the degree of implementation of any one response style. Each of these ratios were transformed using an arcsine transformation such that $X' = 2 \text{ arcsine } X$, where $\frac{1}{4n}$ was substituted for X when $X = 0$. These four transformed proportions were independently correlated with achievement, respect, and understanding scores. A correlation of .328, which is significant at the .05 level for 38 observations, was obtained between the transformed proportion of response which were questions and student ratings of teacher understanding as measured by the Condensed Barrett-Lennard. The other 11 correlations were insignificant.

Several multiple regressions were also conducted. The transformed proportions representative of the number of reflections, identifications, questions, and solutions were considered as multiple predictors of the dependent variables of achievement, respect, and understanding. Nonsignificant multiple R's of 0.328, 0.349, and 0.446 were obtained respectively. The results of this analysis, including the standardized regression coefficients, may be seen in Table 5.

Discussion

No significant results were found between the five treatment groups with respect to student achievement. Adjusted achievement scores are so similar that trends are not identifiable. One possible explanation is that the treatment was too short and did not have enough time to take effect; longer interviews might have provided significant results. Another possible explanation is that teacher responses during a pre-teaching interview have no effect on later student performance. A more likely explanation based on the data is that for certain treatments individuals respond differently to the same treatment. The presence of correlations which are not significantly different from zero in the reflection and composite group, might indicate that some students performed better after a reflective or composite listener while other students responded negatively.

Insignificant correlations between student achievement and student ratings of teacher respect were obtained for the total sample as well as for four of the five treatment groups. However, a significant correlation between respect and achievement was obtained for the composite group. Since respect seems to communicate to the student that the teacher believes in him, and expects him to be successful, the presence or absence of respect should have a greater affect on students who believe less in themselves. Since this study was conducted on a group of highly motivated undergraduate students, their vulnerability to the treatment was minimal. Had the treatment been longer, over a sustained period of time, or conducted on underachievers, the results might have proven significant.

Insignificant correlations between student achievement and student ratings of teacher understanding were obtained for the total sample as well as for all five treatment groups. The t-test conducted also produced insignificant results. Whether or not the teacher understands the student personally seems unrelated to student achievement.

The relationship between response style implementation and student achievement was considered. The degree of implementation of each of the response styles was correlated with SAT scores. A multiple correlation between SAT scores and implementation of the four response styles was also conducted. None of these correlations was significantly different from zero. The results of this analysis indicate that there is no relationship between the degree to which the response styles are implemented and student achievement. Student performance on the achievement test seemed unaffected by the relationship established between teacher and student. Perhaps the fact that the relationship was a temporary phenomena decreased the student's vulnerability to it. Also, since none of the response styles were evaluative they communicated to the student interest and neutrality and therefore did not discourage or encourage him from achieving.

Examining the results of the investigation very carefully also points to the possibility that perceived respect is directly related to student achievement. The only relationship which could be determined between response styles and achievement was for the composite group. Students in this group felt the most respected and there was also a high correlation between this respect score and student achievement.

Table 1

Means of Interviewer Responses

Reflections	12.158
Identifications	10.592
Questions	17.263
Solutions	3.013

Mean number of responses per interview - 43.973

Mean number of responses classified per interview - 43.025

Table 2

Means of the Criterion Variables for the Four Treatment Groups, the Control Group, and the Total Sample

Variable	Score Possible	Reflection	Identification	Questions	Composite	Control	Total Sample
SAT	20	10.750	12.000	12.562	11.125	12.875	11.978
MAT	40	23.625	25.333	27.437	25.750	30.750	26.782
Respect	60	42.125	38.500	45.063	49.250	37.376	43.087
Understanding	60	33.375	29.166	41.875	39.250	36.370	37.326
N		8	6	16	8	8	46

Table 3

Correlations between the Criterion Variables for the Four Treatment Groups, The Control Group and the Total Sample

	Reflection	Identification	Questions	Composite	Control	All Groups
SAT W/MAT	0.149	0.646	0.806**	0.014	0.812**	0.579**
SAT W/R	-0.128	0.158	-0.165	0.809**	-0.446	-0.150
SAT W/U	0.306	0.100	0.067	0.048	0.007	0.142
MAT W/R	0.336	-0.092	0.129	0.340	-0.427	-0.068
MAT W/U	0.631*	-0.373	0.300	0.312	-0.051	-0.231
N	8	8	16	8	8	46
.05	0.621	0.729	0.426	0.621	0.621	0.256
.01	0.789	0.882	0.574	0.789	0.789	0.295

Table 4

Mean Scores of MAT, SAT, and
Adjusted SAT for the Five Treatment Groups

Treatment Group	SAT	MAT	ADJUSTED SAT
Reflection	10.750	23.625	11.437
Identification	12.000	25.333	12.315
Question	12.562	27.438	12.420
Composite	11.125	25.750	11.349
Control	12.875	30.750	12.011

* $P < .05$

Table 5

Results of Multiple Regression with Response Styles as Predictors and SAT, Respect, and Understanding Scores as Criterion Variables

	Standardized Regression Coefficients		
	SAT	R	U
Reflection	.554	.976	1.04*
Identification	.786	1.06	1.21*
Questions	.842	1.20*	1.47**
Solutions	-.006	.415*	.408*
Multiple-R	.328	.349	.446
F - Ratio (sig. of multiple-R)	.997	1.14	2.05*

P < .10 = *

P < .05 = **

P < .01 = ***

LIST OF REFERENCES

1. Aspy, D. A study of three facilitative conditions and their relationship to the achievement of third grade students. Unpublished doctoral dissertation, University of Kentucky, 1965

2. Aspy, D. Toward a technology for humanizing education. Champaign, Illinois: Research Press, 1972.

3. Barrett-Lennard, G. T. Dimensions of the client's experience of his therapist associated with personality change. Unpublished doctoral dissertation, University of Chicago, 1959.

4. Barrett-Lennard, G. T. Dimensions of therapist response as causal factors in the rapeutic change. Psychological Monographs: General and Applied, 1962, 76, No. 43 (Whole No. 562).

5. Campbell, D. and Stanley, J. Experimental and quasi-experimental designs for research. Chicago: Rand McNally & Co., 1963.

6. Carkhuff, R. Helping in human relations: Volumes I and II. New York: Holt, Rinehart and Winston, 1967.

7. Handbook: School and College Ability Tests. Princeton, N.J.: Educational Testing Service, 1973.